

Customer No.: 31561
Application No.: 10/064,641
Docket No.: 9330-US-375

AMENDMENTS

In The Claims

1. (currently amended) A DTMF (Dual Tone Multi-Frequency) decoder that combines software and hardware, comprising:
 - an amplifier, used to amplify and reshape a DTMF signal and output an amplified DTMF signal;
 - an analog to digital converter, coupled to the amplifier, used to convert the amplified DTMF signal from analog to digital and output a digital DTMF signal, wherein the analog to digital converter has a precision level to preserve a frequency spectrum but not to preserve a signal amplitude; and
 - a CPU, coupled to the analog to digital converter, used to perform a digital filtering on the digital DTMF signal to complete a decoding operation.
2. (original) The DTMF decoder that combines software and hardware of claim 1, wherein the amplifier comprises a non-invert terminal, an invert terminal, and an output terminal.
3. (original) The DTMF decoder that combines software and hardware of claim 2, wherein the non-invert terminal couples to a first terminal of a telephone line, the invert terminal couples to a second terminal of the telephone line, and the output terminal outputs the amplified DTMF signal.
4. (currently amended) A DTMF (Dual Tone Multi-Frequency) decoder that combines software and hardware, comprising:
 - an amplifier, used to amplify and reshape a DTMF signal and output an amplified DTMF signal;

Customer No.: 31561
Application No.: 10/064,641
Docket No.: 9330-US-375

an analog to digital converter, coupled to the amplifier, used to convert the amplified DTMF signal from analog to digital and output a digital DTMF signal, wherein the analog to digital converter has a precision level to preserve a frequency spectrum but not to preserve a signal amplitude; and

a digital logic operation circuit, coupled to the analog to digital converter, used to perform a digital filtering on the digital DTMF signal.

5. (original) The DTMF decoder that combines software and hardware of claim 4, wherein the amplifier comprises a non-invert terminal, an invert terminal, and an output terminal.

6. (original) The DTMF decoder that combines software and hardware of claim 5, wherein the non-invert terminal couples to a first terminal of a telephone line, the invert terminal couples to a second terminal of the telephone line, and the output terminal outputs the amplified DTMF signal.

7. (currently amended) An operating method of a DTMF (Dual Tone Multi-Frequency) decoder that combines software and hardware, comprising:

amplifying and reshaping a DTMF signal to output an amplified DTMF signal;

converting the amplified DTMF signal from analog to digital to output a digital DTMF signal, wherein a precision level is set so that a frequency spectrum is preserved but a signal amplitude is not preserved; and

performing a digital filter on the digital DTMF signal to complete a decoding operation.

8. (original) The operating method of a DTMF decoder that combines software and hardware of claim 7, wherein the DTMF signal is amplified and reshaped by an amplifier.

9. (original) The operating method of a DTMF decoder that combines software and hardware of claim 8, wherein the amplifier comprises a non-invert terminal, an invert terminal, and an output terminal.

Customer No.: 31561
Application No.: 10/064,641
Docket No.: 9330-US-375

10. (original) The operating method of a DTMF decoder that combines software and hardware of claim 9, wherein the non-invert terminal couples to a first terminal of a telephone line, the invert terminal couples to a second terminal of the telephone line, and the output terminal outputs the amplified DTMF signal.
11. (original) The operating method of a DTMF decoder that combines software and hardware of claim 7, wherein the amplified DTMF signal is converted from analog to digital by an analog to digital converter.
12. (original) The operating method of a DTMF decoder that combines software and hardware of claim 7, wherein a digital filtering is performed on the digital DTMF signal to complete a decoding operation by a CPU.
13. (original) The operating method of a DTMF decoder that combines software and hardware of claim 7, wherein a digital filtering is performed on the digital DTMF signal to complete a decoding operation by a digital logic operation circuit.
14. (new) The DTMF decoder that combines software and hardware of claim 1, wherein the precision level of the analog to digital converter is between 4 bits and 8 bits.
15. (new) The DTMF decoder that combines software and hardware of claim 4, wherein the precision level of the analog to digital converter is between 4 bits and 8 bits.
16. (new) The operating method of a DTMF decoder that combines software and hardware of claim 7, wherein the precision level of the analog to digital converter is between 4 bits and 8 bits.